DOCUMENT RESUME

ED 104 822 SP 009 055

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TITLE The Confirmability of PBTE.
PUB DATE 30 Mar 75
NOTE 11p.; Paper presented at the Annual Meeting of the American Educational Research Association (Washington, D.C., April 1975)

EDRS PRICE MF-$0.76 HC-$1.58 PLUS POSTAGE
DESCRIPTORS *Educational Accountability; *Educational Research; *Evaluation; Evaluation Criteria; *Performance Based Teacher Education; Performance Criteria; *Program Effectiveness

ABSTRACT

This paper concerns itself with the question, What are the proof conditions of performance-based teacher education (PBTE)? It argues that it is logically impossible to "prove" PBTE programs are effective, and that research data may not be necessary to support the effectiveness claim. PBTE teaching institutions might consider less empirical research necessary in the area of teacher effectiveness and give thought to accepting (a) the logical possibility of the PBTE effectiveness claim, and/or (b) the physical possibility or confirmation claim. The teaching institution could legitimately claim that its students have mastered particular competencies and that it is, therefore, logically possible that they are using these behaviors in the classroom. This could be confirmed by observing those teachers while teaching, and could be confirmed again without structured research or testing, whether or not the institutions are teaching such behaviors. (Author/PB)

ED104822

The Confirmability Of PBTE

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A Paper Presented At The March 30 - April 2, 1975 Meeting Of AERA, Washington, D.C.

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These days many teacher training institutions, researchers, preservice and inservice teachers and their supervisors are talking pro and con about Performance Based Teacher Education (PBTE). There appears to be wide spread support of PBTE Programs in teacher training institutions - most states have persuaded (or imposed) College and Universities to institute such programs. Books are now available on how to set up PBTE programs. There are consultants available to assist and check lists of competencies.

This paper will grant the claims, made by PBTE's *"What is the state of the Art"?*(1) It accepts that PBTE may satisfy society's expectations for teacher training -- a range of skills for classroom use. The question that has been asked again and again and one to which this paper will address itself: What are the proof conditions of PBTE?

This paper will argue that it is logically impossible to (prove) (verify) PBTE programs are effective and perhaps research data are not necessary at this point in time to support the effectiveness claim.(2) It simply may be impossible to design or structure a method for the effectiveness statement. It will further argue that some sense of *confirmability* would avoid extensive testing of (s) and allow more latitude to PBTE program designers and *less* intensive examing for PBTE graduates. Restated, confirming may satisfy, *"PBTE is achieving its announced ends"* (s_1) and lessen the quest to develop means of measuring how well the PBTE trained teacher performs in the classroom.

The problem with the research efforts to sort out the crucial or important competencies (e.g National Commission on Performance-based Education) is the attempt to demonstrate *'is better than X,'* where X represents a traditional teacher training approach. The *'better than'* is this instance *'effectiveness claim'* requires

researchers, research designers, a population, a sustained period of time (one year ++) and money (in short supply these days whether Federal, State, Foundation or from the University), etc.

Now what would be acceptable as proof for the question *"Is PBTE better than X"?* where X represents a traditional teacher training program. Scientific verifiability rests upon the external observation of facts, descriptive data, not upon judgments. If I make the statement *"PBTE is better than X"* and some of you agree, what has been verified? Not the statement *"PBTE is better than X"* but only that I made the statement. It may be of some passing interest for some reason but the verification that I made the statement has no bearing on the question *"Is PBTE better than X?"*

Broadly speaking, arguments can be divided into demonstrations, proofs and probabilities. Proof can be considered as those arguments from experience as leave no reason for doubt or opposition or the assigning of a reason(s) for the support of a given proposition. What are the proof conditions for *"PBTE is better than X"* or *"Is PBTE better than X?"*

It could be argued that for the question *"Is PBTE better than X?"* to have meaning, it must be possible to find operations by which the answer may be found. This means that the question would have no meaning unless there are operations to test the answer. A method by which the answer's correctness could be tested is critical to the question *"Is PBTE better than X?"* otherwise the question is meaningless and there is no answer for a meaningless question. In this sense, the empirical possibility of answering a question gives it meaning and it follows, a way of answering the question. This approach relies heavily on the efficiency and accuracy of instruments and also on those who make and record observations from the instruments or available measuring devices.

Is there any value in viewing *"Is PBTE better than X?"* in a propositional form? Obviously the question as it stands is not in the form X = 2+4 but with a little fudging it can be translated to PBTE>X*. Hopefully it will somehow help us deal with the question. In the propositional form (a proposition is understood to be an expression that contains one or more variables and by substitution - or suitable arguments - becomes true or false) is the terminal (T) or (F) sufficient to satisfy *"Is PBTE better than X?"* The problem viewed from this position is concerned with logical possibility of verifying the state of affairs described by the propositional form. In this frame of reference *"Is PBTE better than X?"* the answer is logically possible but not necessarily empirically possible.

It is logically possible if we can indicate in principle the circumstances under which it can be answered with a true or false statement. *"Is PBTE better than X?"* would be logically impossible if it is unanswerable in principle. In this case it would be without meaning. Perhaps nothing more than a series of words with a question mark after them. It is still without meaning even though it does not violate the rules of grammar. For example, a researcher can give meaning to the question *"Is PBTE better than X?"* by describing a method of discovering which of the suggested answers is true. This would make the answer logically answerable (possible) even though it may not be empirically answerable.

Two proof positions that may be of some value to PBTE have been briefly sketched. The first depends on whether or not we can in practice specify the operations. How can I find the operations by which an answer to *"Is PBTE better than X?"* may be given. If there are no operations to test the answer to the question, what meaning is there to the question. From this point of view, we are left with the position that leads to the recognition that questions can be formulated (and *"Is PBTE better than X"?* may be one such question) which allow for no procedures for checking. By analogy, *"Is*

* > means better than

the Audi automobile better than X?" will be meaningless unless one can understand how to check the correctness of the answer. A procedure or recipe is crucial to this position.

In the second position, the logical possibility of answering a question is sufficient to give the question meaning. Consider the following question: Can a man travel around Mars in his space ship? Admittedly a way out example and it must be argued that at this time it is technically impossible for a human being to go around Mars. And yet, the circumstances can rapidly change. At this time, it may be empirically impossible to travel around Mars but it is not impossible in principle. A logically impossible question is concerned with the impossibility of indicating the meaning of the question or problem.

Now as to the question *"Is PBTE better than X?"* A researcher can give meaning to the question in the second position by describing a method of discovering which of the suggested answers is the true one. This would make the question logically answerable or possible even though it may not be empirically answerable. This would seem to be the case concerning the Soar-Medley paper (AACTE, St. Louis, Oct. 1974). Their question concerning PBTE is sufficient to give it meaning - it is logically possible.

According to the first position, a specifiable set of operations to verify the answer depends on the reliability of the instruments used. This means that the PBTE question can be answered if we have a set of operations to check the correctness of the answer. The main difference between positions (1) and (2) rests on the strictness of the verification principle. Position one requires a stricter view of verification than position two.

There is a third position for viewing *"Is PBTE better than X?"* that may help us consider the PBTE effectiveness claim(s). If by verification is meant a definitive and final establishment of truth then how do we deal with synthetic sentences? Are synthetic sentences ever verifiable? Certainly not in the sense that analytic sentences are verifiable. And are there really any operations with which to test an operation conclusively?

Suppose we argue that *"Is PBTE better than X?"* might be considered from the third position. What about the idea of confirmability? Confirmation opens a new area because it is not dependent on operations and/or the problem of verifiability of synthetic sentences.

What about the question *"Do rivers flow uphill?"* What are the operations that would conclusively test the answer? Let us take a confirmation approach to the question.[3] Simply confirm it is the case and follow with confirmations. The question may be verifiable because it is logically possible that *"rivers flow uphill"* but it is confirmable because there exists the physical possibility of confirmation. It is possible to confirm, or negate, *"rivers flow uphill"* by simply observing rivers. The emphasis is on the physical possibility of confirming a given sentence instead of the logical possibility of verifying any described state of affairs.

I have suggested some proof conditions for PBTE, *"Is PBTE better than X?"* is meaningful if

1. there are operations to test the correctness of the answer
2. the answer to the question can (in principle) be verified, that is if the answer refers to a logically possible state of affairs.

3. If it is physically possible to confirm the answer. If we dropped the empirical research approach, how could *"Is PBTE better than X?"* be supported? Since empirical research has not satisfied the question, can any one or all three proof conditions support PBTE's main thrust to change teacher education and certification, from specified course requirements and written test achievement measurements to performance standards in behavorial terms?

1. How would *"operational"* help as a proof condition? Operationalism, mostly ~~used~~ in the area of science may be used by an investigator by placing the emphasis on the operations(s) and the consequent observations. The question *"What is temperature?"* using this approach might be answered

> *'if a thermometer is placed in a substance, the temperature is the thermometer reading.'*

The operation of the investigator is the placing of the thermometer in the substance. To the question *'is X soluble in water?'*, the operational response is *'if X is put in water, then X dissolves.'* Following this line of reasoning, *"Is PBTE better than X?"*, If a PBTE teacher is placed in the classroom, then he will display a mastery of a range of behavorial objectives.(4) There may be an argument that this operation really does not test the answer, or this example is tainted by logical empiricism - test by experiment or observation, but I would argue it meets a crucial test of operationalism -. PBTE trained teachers must be able to perform the same operation (competencies) with reasonable agreement in their results.

2. What about the proof condition *'is it logically possible in principle?'* Does a method exist for finding the answer or detailing a method for discovering

the answer? Whether or not it is empirically possible is not of consequence; *"if X is put in water, then X dissolves"* but rather than it is logically possible to discover whether or not *'X'* dissolves in water. That a method exists would satisfy the logically possible condition. For the question *"Is PBTE better than X"* it would translate to whether or not there is a method and not a test by experiment. In other words the problems of empirical verification at this time would not be counted against PBTE. I would argue that it meets a crucial test of *'logically possible'*, a researcher can describe a method to discover if the proposition (question) is true

3. What about the proof condition of *'confirmation'?*

This position rejects *'operationalism'* as a method of conclusively verifying an answer on the grounds that since no synthetic sentence is ever verifiable, *'if X is put in water, then X dissolves'*, X dissolves can not be verified. And it then follows the *'Is PBTE better than X?"* is not verifiable. Applied to PBTE, that PBTE trained teacher will display a mastery of a range of behaviors beyond the conventionally trained teacher, could not be considered as verification that *"PBTE is better than..'*

The confirmation proof condition would support the idea of *'is it physically possible'* to confirm *'PBTE is better than'* instead of *'logically possible'*, and the *'empirically possible'* of operationalism.

For PBTE, the investigator or observer, would confirm or negate *'PBTE is better than'* by observations of PBTE trained teachers in the classroom, perhaps with the help of whatever may be considered suitable instruments for classroom use.

Couched in a less formal manner, the PBTE teaching institutions might consider less empirical research in the area of teacher effectiveness and give thought to

accepting

1. the logical possibility of the PBTE effectiveness claim and/or
2. the physical possibility or confirmation claim.

The teaching institution could legitimately claim that their students have mastered particular competencies and it is therefore, logically possible that they are using these behaviors in the classroom. This could be confirmed by observing those teachers while teaching and could be confirmed again and again outside any structured research or testing to determine that they are or not teaching such behaviors.

This is not to deny PBTE researchers data but rather not having data would not be considered good reason to doubt PBTE.

We would argue for the acceptance of the logical possibility claim until such a time that there is a method for the affirmation or denial of *'Is PBTE better than X'?* And further argue that confirming or the physical possibility claim offers an interesting and fresh approach to the PBTE problem.

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